REMARKS

Applicant wishes to thank the Examiner for withdrawing the § 101 and § 112 rejections, and for withdrawing the objections to the specification and the drawings.

I. Claim Rejections under 35 U.S.C. § 103 based on Hipp and Ito

Claims 1-4, 6-9, 12-14, 18, 20, 23-27, 31-36, and 61-63 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. 2003/0086596 (Hipp) in view of U.S. Patent No. 5,535,289 (Ito). Applicant believes that the Examiner meant to reject claim 22 as well since the claim 22 is addressed on page 6 of the Office Action.

As an initial matter, Applicant respectfully notes that the following arguments do not appear to have been considered and addressed in the current Office Action. In view of the following arguments, Applicant believes that the § 103 rejections should be rendered moot.

Claim 1 recites that the act of enhancing is performed such that an image of the moving object is enhanced relative to an image of a relatively stationary object *if* the moving object moves relative to the stationary object (Emphasis Added). Claims 22, 31, and 63 recite similar limitations. According to page 5 of the Office Action, figure 4a of Hipp allegedly discloses the above limitations. Applicant respectfully disagrees.

Applicant notes that claims 1, 22, 31, and 63 describe that the act of enhancing is conditioned upon whether the object moves (note the limitation "if"). There is nothing in figure 4a of Hipp that discloses or suggests enhancing an image *if* the object moves relative to a stationary object. Rather, figure 4a illustrates an example of radiographic image showing a search model region (see paragraph 41).

Furthermore, Hipp teaches identifying a specific vertebrae, and tracking such vertebrae in the images (see paragraph 102). Thus, in Hipp, once the vertebrae is identified, any image enhancement that is performed is always for the specific vertebrae – regardless of whether it moves or not. Therefore, Hipp does not disclose, and in fact teaches away from, enhancing an image that is conditioned upon object movement.

Ito also does not disclose or suggest the above limitations, and is not being relied upon for the disclosure of the above limitations. Since none of the cited references discloses or suggests the above limitations, any purported combination of these references cannot result in the

subject matter of claims 1, 22, 31, and 63. For at least the foregoing reasons, Applicant submits that the prima facie case of the § 103 rejection for claims 1, 22, 31, and 63 based on Hipp and Ito has not been established, and requests that the § 103 rejection be withdrawn.

Claim 1 also recites that *the act of enhancing is accomplished at least in part by performing image averaging and image subtraction* (Emphasis Added). Claims 22, 31, and 63 recite similar limitations. According to page 5 of the Office Action, paragraph 40 of Hipp allegedly discloses image averaging, while column 2, lines 1-3 and figure 1a of Ito allegedly disclose image subtraction, and therefore the purported combination of these different features from Hipp and Ito would allegedly result in the above claimed feature. Applicant must respectfully disagree.

As an initial matter, Applicant respectfully notes that the cited art of record does not support the purported motivation to combine the imaging averaging technique of Hipp with the image subtraction technique of Ito. This is because paragraph 40 of Hipp discloses performing image averaging for images that are generated in a sequence as an object moves. On the other hand, the cited passage of Ito discloses performing image subtraction for two images that are generated using different energies (low and high energies). Notably, the imaging averaging technique of Hipp is a sub-step of a method that is specifically *for tracking a moving object in a video*, while the image subtraction technique of Ito is a sub-step of a completely different method that is specifically for processing images generated using different energies *for improving the image of soft tissue* (see figure 1A and corresponding passages). Thus, one skilled in the art would have no reason to selectively pick two sub-steps from two completely different methods (each slates for completely different purposes) in the respective references, and combine them together.

Also, the method of Hipp does not involve images generated by two different energies, and so the image subtraction (which is for two images at different energies) taught in Ito cannot be applied to Hipp. In other words, there are no different energy images to be subtracted in Hipp, and so the image subtraction of Ito cannot be simply incorporated into the method of Hipp. Note that the prima facie case of any § 103 rejection cannot be established if the purported combination is technically not feasible.

In addition, the Office Action has relied on "enhancing the image data" as the reason to incorporate the image subtraction of Ito into the method of Hipp, alleging that the image subtraction of Ito will enhance the image. However, Applicant respectfully notes that the image subtraction technique of Ito is specifically designed to work with images generated at different energies so that image of soft tissue can be improved. There is nothing in Ito (or in any of the cited art of record for that matter) that indicates the subtraction technique of Ito can work with images generated using a same energy level.

For these additional reasons, Applicant submits that the prima facie case of the § 103 rejection for claims 1, 22, 31, and 63 based on Hipp and Ito has not been established, and requests that the § 103 rejection be withdrawn.

Applicant notes that the above arguments have not been considered and addressed in the current Office Action, and believes that the § 103 rejections should be rendered moot in view of the above remarks.

II. Claim Rejections under 35 U.S.C. § 103 based on Holliman and Hipp

Claims 40, 43, 46, 47-49, 50, 53, and 56 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over U.S. Patent No. 6,075,557 (Holliman) in view of Hipp.

Claim 40 recites that the act of determining whether the object has moved comprises using a contrast associated with the first *composite image* (which is obtained by performing a subtraction function) (Emphasis Added). Claims 50 and 53 recite similar limitations. According to page 17 of the Office Action, Holliman does not disclose that the first image is a composite image. However, Applicant also notes that the beginning of the same paragraph on page 17 of the Office Action states that element 49 in figure 12 of Holliman allegedly discloses a composite image. To the extent that the Office Action is relying on element 49 in figure 12 of Holliman for the alleged disclosure of a composite image, Applicant submits that such passage of Holliman does not disclose or suggest a composite image. Rather, element 49 of Holliman actually discloses template matching between a template and an image area (see figure 12), and therefore, the element 49 does not disclose or suggest a composite image.

Also, contrary to the Examiner's characterization of element 49 that it discloses a composite image, Applicant respectfully notes that element 49 in figure 12 actually states

"Template matching by finding the position where there is a best correlation between the template and the underlying image area." Thus, the so-called template matching in Holliman actually involves determining correlation between the template and an image area, and does not involve determining any *composite image*. Notably, the correlation determination results in a "correlation value" (see element 50 of figure 12), which is a number, and therefore, is clearly not a composite "image."

Pages 4 and 17 of the Office Action also cites to column 11, lines 33-38 of Holliman for the disclosure of a "differential movement method," and states that such method "is used to create a composite image between the template and the input image." However, as discussed, Holliman discloses template matching that results in a single value, not a composite image. Thus, the differential movement method for the alleged template matching actually results in a value, not an image. This is evidenced by the description in Holliman, describing that the cross-correlation value at the best-matched position resulted from the template matching "would be 1" (c14:20-21), which value is clearly not a composite image. Thus, Holliman clearly does not disclose or suggest the above limitations.

The method disclosed in Hoffman, which is allegedly described by the Examiner as the differential movement method, is not for determining any image (much less, a composite image). This is further evidenced by the disclosure on column 11, lines 33-38 of Holliman, which describes that the differential movement method "determines the movement of the target image between consecutive fields *and adds this to the position* found by local template matching. . ." (Emphasis Added). Thus, the so-called differential method actually results in a positional movement value, not a composite image.

Page 17 of the Office Action also cites to paragraph "40, lines 4-11" of Hipp. To the extent that the Office Action is relying on this passage of Hipp for the alleged disclosure of using a subtraction function to determine a composite image, Applicant also submits that such passage of Hipp does not disclose or suggest such feature. Notably, the cited passage of Hipp discloses "averaging" adjacent images. Thus, the Hipp discloses averaging technique, which is not a subtraction function.

Since Holliman and Hipp do not disclose or suggest the above limitations, any purported combination of these references cannot result in the subject matter of claims 40, 50, and 53. For

at least the foregoing reasons, Applicant respectfully submits that the prima facie case of the § 103 rejection for claims 40, 50, and 53 based on Holliman and Hipp has not been established, and requests that the § 103 rejection be withdrawn.

III. Claim Rejections under 35 U.S.C. § 103 based on Hipp and Abe

Claims 64-66 stand rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Holliman in view of Hipp, and further in view of U.S. Patent No. 5,134,472 (Abe).

As an initial matter, Applicant respectfully notes that the following arguments do not appear to have been considered and addressed in the current Office Action. In view of the following arguments, Applicant believes that the § 103 rejections should be rendered moot.

Claim 64 recites that the act of determining whether the object has moved *does not require a determination of an amount of movement by the object* (Emphasis Added). Claim 65 recites that the means for determining whether the object has moved is configured to determine whether the object has moved *without determining an amount of movement by the object* (Emphasis Added). Claim 66 recites that the act of determining whether the object has moved *does not require a determination of an amount of movement by the object* (Emphasis Added).

Applicant agrees with the Examiner that Holliman and Hipp do not disclose or suggest the above limitations. According to the Office Action, column 1, lines 43-55 of Abe allegedly disclose the above limitations. Applicant respectfully disagrees. First, Applicant respectfully notes that column 1, lines 43-55 does not disclose or suggest that an amount of movement of the object is not determined. Rather, quite the opposite, Abe in fact discloses using position data in its algorithm (See for example, claim 7 stating "generating at least two position signals corresponding to at least two positions of the moving object."). Also, column 8, line 31 of Abe discloses YE_f-YE_n, which corresponds to an amount of movement of object from coordinate YE_n to coordinate YE_f (see figure 8B).

Since Holliman, Hipp, and Abe do not disclose or suggest the above limitations, any purported combination of these references cannot result in the subject matter of claims 64-66. For at least the foregoing reasons, Applicant submits that the prima facie case of the § 103 rejection for claims 64-66 based on Holliman, Hipp, and Abe has not been established, and requests that the § 103 rejection be withdrawn.

CONCLUSION

If the Examiner has any questions or comments regarding this response, please contact the undersigned at the number listed below.

To the extent that any arguments and disclaimers were presented to distinguish prior art, or for other reasons substantially related to patentability, during the prosecution of any and all parent and related application(s)/patent(s), Applicant(s) hereby explicitly retracts and rescinds any and all such arguments and disclaimers, and respectfully requests that the Examiner re-visit the prior art that such arguments and disclaimers were made to avoid.

The Commissioner is authorized to charge any fees due in connection with the filing of this document to Vista IP Law Group's Deposit Account No. **50-1105,** referencing billing number **VM 03-009**. The Commissioner is authorized to credit any overpayment or to charge any underpayment to Vista IP Law Group's Deposit Account No. **50-1105,** referencing billing number **VM 03-009**.

Respectfully submitted,

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